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XXXVII.—*Notes on an Examination of Lamarck's species of Fossil Terebratulæ* *. By THOMAS DAVIDSON, Esq., Member of the Geol. Soc. of France. Illustrated by figures of all the species drawn from the original specimens.

THE natural history of the invertebrated animals by the celebrated Chevalier de Lamarck is a work so generally consulted by all naturalists that it is unnecessary here to allude to its scientific value. Some parts however are not so clear as might be desired, owing to the state of science at that period, and especially from the want of figures illustrative of the text, so necessary an appendix to all specific descriptions.

The fossil *Terebratulæ* especially required some investigation, and on the suggestion of Mr. Morris, who had previously examined the Lamarckian species, and other palæontologists, I determined to visit Paris in February last, and endeavour to obtain the loan of all the typical specimens described in Lamarck's volume and preserved in the collections of that metropolis.

Lamarck having had the misfortune of losing his sight, without the remotest hope of regaining it, during the publication of the sixth volume of his '*Animaux sans Vertèbres* †,' M. Valenciennes, at his suggestion, took upon himself the determination of the species of the genus *Terebratula* that he was able to see in the Paris collections: so that it is in reality to M. Valenciennes that science is indebted for the publication of that part of the work relating to the Brachiopoda. On expressing to Prof. Milne-Edwards and Valenciennes my wish to investigate those specimens of Lamarck's in the museum of the Garden of Plants, they at once in the most liberal manner (after having obtained the consent of the Executive Council of that establishment) lent me the specimens to bring to England in order that I might more carefully examine and illustrate them, and I here publicly express

* *Animaux sans Vertèbres*, vi. Feb. and June 1819.
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† *Ib.* p. 244.
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my sincere thanks to those gentlemen of the Garden of Plants for the great confidence they reposed in me, and for the unlimited assistance they have always shown to those who take an interest in the study of science.

All the species described were not however to be found in the collection of the Garden of Plants; the greater number belonged to Lamarck's private collection, which became at his death the property of the Prince Massena, who sold them to M. le Baron Benjamin Delessert, and which now form part of his extensive and celebrated museum. M. Chenu, Curator of that Museum, in the most liberal manner placed at my disposal the remaining type specimens of Lamarck's collection. The specimens from the Garden of Plants are all ticketed by M. Valenciennes, the original describer; all those in B. Delessert's collection are labeled by Lamarck himself. M. Valenciennes has also, in the kindest possible manner, given me all the information in his power relative to some of the species which had presented any difficulty.

The original monograph of Fossil Terebratulæ, published thirty years ago (1819), was one of the first works written by the justly celebrated Valenciennes, and appeared at a time when little was known on the subject, and it is but justice that those species then established should be retained in the nomenclature where no objections exist. At that period authors were not in the habit, or rather did not feel so much the importance, of giving any reference to locality or strata; they simply contented themselves with a short Latin description of the outer form of the object under examination, so that with very few exceptions there exist no positive data as to the locality or geological position of the specimens in Lamarck's work. There is also some difficulty in a few cases of defining which were Lamarck's real types, as several specimens of different species are sometimes placed on one tablet, the description of which is adapted to more than one form; and lastly, it is possible that some of the specimens now in B. Delessert's hands may have been displaced while in the possession of Prince Massena. I have however compared as carefully as possible the specimens with the descriptions, and by the kind assistance of M. Valenciennes (where doubts existed) am able to lay before the public the figures of each species drawn from the types on which they were established. I must however add, that in some few cases the specimens belonging to Lamarck's collection were in bad condition, which I have restored in the figures from well-preserved specimens of the identical species in my own collection, in order to prevent misconceptions as to the shells intended as types. I have also thought it advisable in the text and in the plates to preserve the same order and numbers as used in Lamarck's sixth volume (1819); and in order to keep

this report as short as possible, I have simply added a few observations after each Latin description of Lamarck or Valenciennes.

In 1836 M. Deshayes published the 7th volume of his new edition of Lamarck's work, to which he annexed numerous species and notes, but did not materially increase our knowledge of the fossil species described in the edition of 1819, from not having had the advantage of examining and comparing the specimens in the original collection; there are however some useful notes and references which may be consulted with advantage.

The following is the order in which Lamarck's species are described in the 6th volume of the 'Animaux sans Vertèbres.' As the recent species have been often figured, it will simply be necessary to give the list:—

1. *Terebratula vitrea*, Lamarck (Linn. sp.).
2. ————— *dilatata*, Lamk.
3. ————— *pisum*, Lamk.
4. ————— *globosa*, Lamk.
5. ————— *rotundata*, Lamk.
6. ————— *flavescens*, Lamk.
7. ————— *dentata*, Lamk.
8. ————— *dorsata*, Lamk.
9. ————— *sanguinea*, Lamk.
10. ————— *Caput serpentis*, Lamk. (Linn. sp.).
11. ————— *truncata*, Lamk. (Linn. sp.).
12. ————— *psittacea*, Lamk. (Linn. sp.).

FOSSIL SPECIES.

13. *Terebratula subundata* (Sow. M. C. tab. 15. fig. 7).

14. *Terebratula carnea* (Sow. M. C. tab. 15. fig. 5, 6).

Obs. These two species are not to be seen in Lamarck's collection.

15. *Terebratula depressa*, Val. in Lamarck. Pl. XIII. fig. 15.

T. testa oblonga, transversim dilatata, supra coarctata et obtusa, striis concentricis lævibus: nate producta non incurva: foramine magno.

Var. *b.* testa minore: nate breviori.

Obs. This species is perfectly characterized and found in the Tourtia beds of Tournay and Montignies-sur-Roc in Belgium, whence Lamarck's specimens came; it is strange however how little it was known, since M. le Vicomte D'Archiac, in his "Rapport sur les Fossiles du Tourtia," Mémoires de la Soc. Géol. de France, vol. ii. 2nd series, p. 313. pl. 17. fig. 2 *a, b, c, d*, 3-10, 1847, believed it new, and gave to it the name of *Terebratula Nerviensis*, which is a synonym: in the Quarterly Journal of the

Geol. Soc., Nov. 1846, it was attributed to *Terebratula ovalis*, Lamk., by mistake. Lamarck's var. *b.* does not belong to the same species or epoch; it is a young specimen of some oolitic species, and is stated to come from Saturnin near Domfront, dép. de la Sarthe.

Both the species and variety may be seen in B. Delessert's collection, and I may here state that every time I mention B. Delessert's collection, I mean that part belonging to Lamarck's series.

16. *Terebratula ovalis*, Val. in Lamk. Pl. XIII. fig. 16.

T. testa ovali, transversim et superne dilatata, striis concentricis lævibus: nate incurva.

Obs. This species is quite distinct from *Terebratula depressa*, and is from the white jura or coral rag of Wurtemberg. Mr. Waterhouse showed me several young specimens referable to this species in the collection of the British Museum. In B. Delessert's collection.

17. *Terebratula numismalis*, Val. in Lamk. Pl. XIII. fig. 17.

T. testa subrotunda, lævi, utraque valva superne sinu instructa: striis concentricis remotis: nate brevi: foramine minimo.

Obs. This species is well known, has often been described and figured, and requires therefore no further remarks, except that I could not find the type specimen in the Paris collections; but as reference is made to tab. 240. fig. 1 *a, b*, of the 'Encyclopédie Méthodique' by Lamarck, no doubts can exist. I have therefore figured here a magnificent specimen of the species from the liassic beds of Normandy belonging to M. Deslongchamps. *Ter. Cor.* No. 22, is merely a bilobate variety of this species.

18. *Terebratula umbonella*, Val. in Lamk. Pl. XIII. fig. 18.

T. testa elongata turgida, transversim compressa, supra obtusa, lævi: umbonibus pre-elevatis: nate incurva.

Obs. This species has a strong resemblance to *Terebratula lagenalis*, Schloth., 1820; one specimen shows the deltidial area, while in others the umbo of the ventral valve touches the beak; this is visible in our English specimens of *lagenalis*; it was figured in the 'Encyclopédie Méthodique,' pl. 240. fig. 3, but the characters of the species are not well represented. Six specimens are to be seen in B. Delessert's collection; and on a ticket written by M. Menard we find, "de Montigny, commune de Mont-Bizol sur la Sarthe, à trois lieues de Mans."

19. *Terebratula digona* (Sow. M. C. tab. 96. fig. 1. 5).

Obs. Several specimens are to be seen in B. Delessert's collection.

20. *Terebratula deltoidea*, Val. in Lamk. Pl. XIII. fig. 20.

T. testa compressa, transversim dilatata, triangulari, lævi, margine supero recto in medio sinuato.

Obs. This species was first figured and described by Fabio Colonna (1616) under the name of *Anomya diphya*, which name must be preserved. It subsequently received the following names: *Terebratula triquetra* in 1811 from Parkinson, *Ter. deltoidea* in 1819 from Lamarck, and *Ter. Antinomya* from Sig. Catullo. It is only within the last few years that geologists are agreed as to its geological position, which is the middle jurassic beds or *Terrain Callovien* of M. D'Orbigny (Italy and Porte-de-France near Grenoble): it differs from a similarly shaped shell described under the name of *Terebratula diphya* by M. le Baron D'Hombre Firmas, said to be from the Neocomian beds of Gigondas; and subsequently distinguished and figured by M. D'Orbigny under the name of *Terebratula diphoïdes*, 'Pal. Franç. Ter. Crétacés,' vol. iv. p. 87. pl. 509. The specimen in B. Delessert's collection belongs to the *Ter. diphya*, and would appear to have come from Italy. Figures are given in the 'Encycl. Méthodique.' This species has also received several other names.

21. *Terebratula Triangulus*, Val. in Lamk. Pl. XIII. fig. 21.

T. testa longitudinaliter elongata, triangulari, lævi: valva inferiore in superiorem reflexa, ad marginem sulco impresso.

Obs. M. D'Orbigny in his 'Prodrome' adopts the name *Terebratula triquetra*, Parkinson, 'Organic Remains,' vol. iii. pl. 16. fig. 8 (1811), a name given likewise by that author to *Terebratula diphya*, and both belong to the same beds and localities. Subsequently Sig. Catullo named it *Terebratula mutica*, but which, with Lamarck's, must be added to the synonyms.

22. *Terebratula Cor*, Val. in Lamk. Pl. XV. fig. 22.

T. testa cordiformi subglobosa, sinu valde exarata, striis tenerrimis decussatis.

Obs. No reference to figure, locality or age is given by Lamarck, so that much doubt rested on this species until M. Valenciennes found in the collection of the Garden of Plants the type specimen, which he forwarded to me, and of which an exact figure will be found in Plate XV. As will be seen at once, this species is the same as M. Valenciennes' and Lamarck's *Terebratula numismalis*, No. 17. One of the two must be placed among the synonyms; the specimen which served as the type has exactly the form of a heart, but this is only an accidental shape of the species. It belongs to the lias, and is abundantly found at Vieux Pont in Normandy, and in many other places.

23. *Terebratula birostris*, Val. in Lamk. Pl. XIII. fig. 23.

T. testa subglobosa, subrotunda, lævi, superne subcoarctata, medio sinuata, ad sinum duobus angulis : margine non plicato.

Obs. Only one crushed specimen is to be seen in B. Delessert's collection, without any other indication but the name written by Lamarck. On minute comparisons I believe it is the same as *Terebratula grandis* of Blumenbach, a tertiary shell from Malta : the specimen however is in such bad condition that one can hardly judge of its exact form.

24. *Terebratula Ampulla* (Brocchi, Conchologia Fossile Milan, tab. 10. fig. 5).

Obs. A very fine specimen of this species exists in the collection of the museum of the Garden of Plants, and a similar one in that of the British Museum ; it is a tertiary species found at San Geminiano in the Piacentino, &c. The loop was short, as can be seen in a very fine specimen in M. Deshayes' collection.

25. *Terebratula carinata*, Val. in Lamk. Pl. XIII. fig. 25.

T. testa subquadrangulari lævi ; valva inferiore subcomplanata, superiore didra, medio carinata.

Obs. A few years ago Mr. Morris called attention to this species, which was confounded with Sowerby's *Terebratula resupinata*, M. C. tab. 150. fig. 3, 4, 1818, and which hitherto appears principally characteristic of the liasic period. The *Ter. carinata* of Lamarck has not that I am aware been found in the lias beds, but is an oolitic species distinct by its foramen, and of a much flatter and more elongated form. There are many varieties in the *resupinata* group, which I hope to figure and describe shortly in my monograph of British Fossil Brachiopoda for the Palæontographical Society. I was not able to find the type specimen of this species in Paris, and have therefore figured a well-characterized specimen from the oolite beds near Caen.

26. *Terebratula concava*, Val. in Lamk. Pl. XIII. fig. 16.

T. testa parva : valva inferiore plana, superiore majore concava striis concentricis.

Obs. Lamarck states this species to be small, white, with a ventral valve flattened, and a very convex dorsal one : locality Meudon. No other cretaceous species from that locality would answer the above description except *Magas pumilus* of Sow. In Lamarck's collection however we find a small shell which answers the above description, except in colour, ticketed by Lamarck *Ter. pumila*, and the only specimen that I could find ; but it belongs to quite another species, being the well-known Oxford clay *Tere-*

bratula impressa. The description however cannot have been drawn up from that shell, or Lamarck would not have stated it to be white. I have given the figure of the *Terebratula impressa* marked *Ter. concava* from B. Delessert's collection, as well as a figure of *Magas pumilus* from Meudon marked fig. M. It is therefore evident that Lamarck's species must be cancelled from the nomenclature.

27. *Terebratula semiglobosa* (Sow. M. C. tab. 15. fig. 9).

Obs. Lamarck does not seem to have known Sowerby's species, as none of the three specimens marked such in B. Delessert's collection belong to it, being specimens of *Ter. ornithocephala*, and a variety of *Ter. globata*, Sow. The true species is cretaceous.

28. *Terebratula punctata* (Sow. M. C. pl. 15. fig. 4).

Obs. Several specimens are to be seen in M. Delessert's collection, none of which are Sowerby's type: Lamarck's specimens belong to *Ter. numismalis*, *indentata* and *vulgaris*. Sowerby's species is a well-characterized liasic shell.

29. *Terebratula phaseolina*, Val. in Lamk. Pl. XIII. fig. 29.

T. testa parva, subcompressa, rotunda, alba, striis concentricis, margine supero sub-biplicato: nate brevi, non producta.

Obs. M. D'Orbigny seems to consider Lamarck's *Terebratula phaseolina* to be Brocchi's *Anomya biplicata*, Pal. Franç. Ter. Crétacés, vol. iv. p. 95. pl. 511. fig. 9, 15. After comparing the numerous specimens of *Ter. phaseolina* in M. le B. Delessert's collection with the figures given by Brocchi, 'Conchologia Fossile,' p. 469. pl. 10. fig. 8, 1814, I cannot believe them to be the same shell as *Ter. phaseolina*; and since even M. D'Orbigny places a point of interrogation behind his synonym of Brocchi, it is evident he was not certain of the identity. I therefore do not see why Lamarck's well-known species should make place for Brocchi's uncertain one; which has no indication of locality or deposit. It seems also strange that M. D'Orbigny should everywhere write Lamarck's *Ter. phaseolina*, "*phascolina*," and whilst he rejects it in page 95, adopts it in page 109 of the 'Pal. Franç. Ter. Crétacés.'

30. *Terebratula ovata* (Sow. M. C. pl. 15. fig. 3).

Obs. As M. Deshayes observes, in his new ed. of Lamarck, the specimens in the museum of the Garden of Plants do not belong to Sowerby's type. M. Deshayes believes them to resemble *Ter. lata* of Sow., but they do not represent that species.

31. *Terebratula biplicata* (Sow. M. C. pl. 90. fig. 1, 5).

Obs. We find a number of specimens under this name in La-

marck's collection at B. Delessert's, as well as in the museum of the Garden of Plants, none of which however belong to Sowerby's type, but are referable to several distinct forms from various deposits of different ages. Thus for example, those in the Garden of Plants, as well as one in B. Delessert's cabinet, are oolitic; others belong to the Neocomian beds, such as those shells figured and described by M. D'Orbigny in vol. iv. p. 75. pl. 506. of the 'Pal. Franç.' under the name of *Terebratula prælonga*, Sowerby: but M. D'Orbigny is mistaken as to his identification of this shell with the ones described under that name by Mr. Sowerby. Besides these, we find two specimens which are probably *Terebratula Sella*, and as M. Deshayes justly observes in his new edit. of Lamarck, a great number of smooth *Terebratulas* with two plaits have been called *Ter. buplicata*, but which are quite distinct from Sowerby's type, which belongs to the gault of Folkestone and Cambridge.

32. *Terebratula bisinuata*, Val. in Lamk. Pl. XIII. fig. 32.

T. testa subrotunda, subdepressa, antiquata, fragili, lævi, superne buplicata: nate producta non incurva.

Obs. This species belongs to the tertiary beds of the Parisian basin, well figured and described by M. Deshayes, Coq. Foss. des Env. de Paris, tom. i. pl. 65. 1, 2. It has also received several other names, such as *Ter. gigantea*, which, according to Baron Leopold von Buch, would be the same as Lamarck's type: several specimens are to be seen in B. Delessert's collection.

33. *Terebratula Kleinii*, Val. in Lamk. Pl. XIII. fig. 33.

T. testa ovata, depressa, subantiquata, lævi, superne buplicata creberrime et subtilissime punctata: nate incurva.

Obs. Several persons, and among others M. Deshayes (new ed. of Lamarck), refer to this species the *Ter. globata* of Sowerby. M. Valenciennes, who was the original describer of the species, convinced me of the mistake, which can be at once seen from three type specimens in the collection of the Garden of Plants; one of which I have figured in my plate: it belongs to the oolitic beds, probably from Normandy. Lamarck's reference to *Anomya Terebratula* of Linnæus may have led to this mistake. M. D'Orbigny has also fallen into the common error in his 'Prodrome' by attributing *Ter. globata* to Lamarck's species.

34. *Terebratula Pedemontana*, Val. in Lamk. Pl. XIV. fig. 34.

T. testa subrotunda, subdepressa, transversim striata, superne biangulata: umbone elevato, nate recurva. Coll. Museum.

Obs. M. Valenciennes in his description of this species states that it approaches the preceding one above all by the rounded

form of its two plaits: one specimen is to be seen in the museum of the Garden of Plants, which was found by Sig. Bonelli in the tertiary beds near Turin in Italy.

35. *Terebratula quadrifida*, Val. in Lamk. Pl. XIV. fig. 35.

T. testa triangulari-depressa, dilatata, lævi, superne quatuor angulis acutis instructa: nate brevi.

Obs. This is a well-known species, common to the liasic beds of France and England; one specimen only exists in Lamarck's collection at B. Delessert's; it is one of the various shapes this species assumes, passing by insensible gradations into *Terebratula cornuta*, Sow.: nor is it uncommon to find (as can be seen in M. Deslongchamps' cabinet) specimens, one half of which is *quadrifida*, while the other half is *cornuta*: therefore Lamarck's name should be kept for the species, and *cornuta* cancelled from the nomenclature.

36. *Terebratula angulata*, Val. in Lamk. Pl. XIV. fig. 36.

T. testa subtrigona, ventricosa, lævi, margine supero valde sinuato, tribus angulis acutis.

Obs. Three specimens are to be seen in B. Delessert's collection, but which belong to as many species, so that it is difficult to know which Lamarck intended as his type; this however is of little importance, as the name must be canceled, it having been given many years before by Linnæus to a mountain limestone shell differing from Lamarck's specimen.

37. *Terebratula multicarinata*, Val. in Lamk. Pl. XIV. fig. 37.

T. testa magna, rotundata, pectiniformi, costis numerosis carinata: margine non sinuato.

Obs. It is singular that M. D'Orbigny makes no allusion to Lamarck's species, which holds priority over Baron Leopold von Buch's *Terebratula peregrina* published long after 1834, and which M. D'Orbigny adopts in his 'Paléontologie Française,' when at a few steps from his own door he could have seen a fine specimen of this species in Lamarck's collection at B. Delessert's. It is one of the largest Terebratulæ known, and would appear to belong to the Neocomian beds of Châtillon (Drome). Lamarck's type specimen, of which I give a reduced figure, measured in length and breadth 3 inches and $1\frac{3}{4}$ inch in depth, but the species attained much greater dimensions, as can be seen from specimens in the British Museum. It has been well figured by M. D'Orbigny in his 'Pal. Franç. Ter. Crétacés,' vol. iv. p. 493, and in the 'Mém. de la Soc. Géol. de France,' vol. iii. p. 156. pl. 15. fig. 28.

38. *Terebratula tetraëdra* (Sow. M. C. tab. 83. fig. 4).

Obs. The specimens attributed to this species in Lamarck's collection do not belong to Sowerby's type, but to that beautiful and well-characterized species known under the name of *Terebratula decorata*, Schloth., so admirably illustrated and described by M. Le Vicomte D'Archiac in the 'Mém. de la Soc. Géologique de France,' and also well represented in pl. 244. fig. 2. of the 'Encyclopédie Méthodique.' Lamarck, singular to say, had in his collection specimens of Sowerby's type, but which he places in his *Terebratula spathica*.

39. *Terebratula plicata*, Val. in Lamk. Pl. XIV. fig. 39.

T. testa subtetraëdra, subgibbosa, plicata, non sinuata : 5 vel 6 costis ab umbone obtusis, et ad marginem angulatis : nate brevi.

Obs. Lamarck or Valenciennes refers to the 'Encyc. Méthodique,' pl. 243. fig. 11 and pl. 244. fig. 1, and states that his species approaches the preceding one : but the absence of a sinus forcibly distinguishes it. This species is well characterized, and seems to belong to the liasic beds of the north of Italy. There exist, besides the two specimens described by M. Valenciennes, in the Garden of Plants, a number of fine specimens from the collection of the Marquis de Drée. In B. Delessert's collection we also find two specimens labeled *Terebratula plicata* var., which however belong to the *Inoceramus sulcatus* and to the *Pecten quinquecostatus*. Lamarck's *Terebratula plicata* being a good species should be retained. Mr. Buckman was not aware of Lamarck's priority when he attached a similar name to another species. M. D'Orbigny in his 'Prodrome' has given to Mr. Buckman's shell the name of *Terebratula subplicatella*, D'Orb. 1847, which however he had no right to do according to his views, because Lamarck's species not being a true type of the genus *Terebratula*, would be placed by him in the genus *Hemithyris* or some other of his proposed genera, while Mr. Buckman's *Ter. plicata* might then remain in the *Terebratulas*. Lamarck's species varies in the number of plaits on the mesial fold ; some specimens present four plaits, others five, and in a few specimens two plaits unite into one towards the margin of the shell.

40. *Terebratula canalifera*, Val. in Lamk. Pl. XIV. fig. 40.

T. testa trigonata, gibba, longitudinaliter sulcata, sinuata, cardine recto : nate declivi.

Obs. The *Terebratula canalifera* of Lamarck belongs to the genus *Spirifer*, and reference is made to pl. 244. fig. 4, 5 and 6. of the 'Encyclopédie Méthodique : ' fig. 5, which appears to be the type, and is a well-known Devonian species from Paffrath

near Cologne, described and figured by Schlotheim in 1822 under the name of *Terebratulites aperturatus*, Nachträgen, pl. 17. fig. 1. Lamarck's name published in 1819 ought to have priority; the species would therefore be the *Spirifer canalifera* (Val. Sp. S.). All the figures referred to in pl. 244 of the 'Encyclopédie' do not however belong to the same species; fig. 5 would be the *Spirifer canalifera*, fig. 4 the *Spirif. Verneuilii* (Murch.), and fig. 6 the *Spirif. Archiaci* (Murch.). We also find assembled under the same head in the collection of the Garden of Plants, as well as at B. Delessert's, besides the above-mentioned species, specimens of *Spirif. rostratus* from the lias, and *Spirif. Bouchardii* from the Devonian beds. One specimen of *Spirif. Verneuilii*, which I figure in my plate under the number 40 A, shows the perfect deltidium, rarely preserved in the Spirifers of that species.

41. *Terebratula lævicosta*, Val. in Lamk. Pl. XV. fig. 41.

T. testa trigonata, gibba, lateribus sulcata: in medio valvæ majoris sinu et minoris costa lata, utriusque lævibus, transverse striatis: cardine recto, nate recurva.

Obs. No reference as to figure is given by Lamarck; all that is stated is, that the "fossil comes from Benberg near Cologne." However M. Valenciennes kindly informs me, when sending his type specimens, that he received the shells on which he established the species in 1817 from Prof. Nöggerath on his visit to Bonn: it is the same shell figured and described in 1822 by Schlotheim under the name of *Terebratulites ostiolatus* (Nachträgen, pl. 17. fig. 3), placed afterwards in the Spirifers by B. von Buch (Mém. Soc. Géol. de France), and by Bronn in König's genus *Trigonotreta*; but as M. Valenciennes appears the oldest describer of the species, it should retain the name of *Spirifer lævicosta* (Val. Sp. S.); it belongs to the Devonian beds of the Eifel, and not to Benberg as stated by Lamarck.

42. *Terebratula intermedia*, Val. in Lamk. Pl. XV. fig. 42.

T. testa subtetraëdra, dilatata, plicata, sinuata, 4 costis ad sinus 5 ad latus: nate brevi.

Obs. I was not able to find the original specimen on which the species was established, but reference is made to pl. 245. fig. 3 *a, b.* of the 'Encyclopédie Méthodique,' which is sufficient. I have thought it advisable, in order to complete the series, to give here the figure out of that work. Lamarck states that his species is intermediate between *Terebratula tetraëdra* and *plicata*: it evidently belongs to the jurassic period.

43. *Terebratula alata*, Val. in Lamk. Pl. XIV. fig. 43.

T. testa subtrigonata, subgibba, superne sinu cavo exarata, creberrime sulcata: nate brevi.

Obs. Lamarck refers to pl. 245. fig. 2 *a, b.* of the 'Ency. Méthod.,' but as M. Deshayes justly observes in his new edition of Lamarck, this species is the same as that published in 1814 by Brocchi under the name of *Anomya Vespertilio*, Conchologia Fossile, fig. 17, which is also evident from specimens both in the collection of the Garden of Plants and of B. Delessert's museum. M. Deshayes also remarks, that on looking at the figures 1 and 2 of the pl. 245, one would have some difficulty in believing that both belonged to the same species: I agree with M. Deshayes in this—fig. 1 would agree with Brocchi's type and Lamarck's specimens. This species varies much, as can be well seen in M. D'Orbigny's figures, Pal. Franç. vol. iv. pl. 499. fig. 1–7. Fig. 2. pl. 245, the one referred to by Lamarck, is probably *Terebratula compressa*, Lamk. no. 54, as it shows that peculiarly shaped front so well displayed in this shell; however there are more than one species placed under this head in the Paris collections. At the Garden of Plants we find on the same tablet a specimen of *Terebratula Vespertilio* associated with *Ter. latissima* of Sowerby, and at M. Delessert's we see three or four species, among which, under the head of variety, is placed a specimen of *Pentamerus*, a *Spirifer*, and a *Terebratula* of quite another shape. This association is so strange that I can hardly believe they were so put together by Lamarck. Brocchi's name however should be preserved to this species, and that of Lamarck placed among the synonyms. The identity of Lamarck's species with that of Brocchi is also admitted by M. D'Orbigny in his 'Pal. Française Ter. Crétacés,' vol. iv. p. 44.

44. *Terebratula concinna* (Sow. M. C. tab. 83. fig. 6).

Obs. The specimens under this name in B. Delessert's collection appear to belong to *Ter. obsoleta*, Sow.

45. *Terebratula media* (Sow. M. C. tab. 83. fig. 5).

Obs. The specimens ticketed thus by Lamarck belong to Sowerby's true *Ter. tetraëdra*: the distinctions between *Ter. tetraëdra* and *media*, Sow., are very trifling.

46. *Terebratula pectita* (Sow. M. C. tab. 138. fig. 1).

Obs. I did not find any specimens of this species in either of Lamarck's collections.

47. *Terebratula Cardium*, Val. in Lamk. Pl. XIV. fig. 47.

T. testa elongato-ovata, convexa, plicata, sulcis longitudinalibus crassis, rotundatis: nate prominula.

Var. *b.* testa compressiuscula, sulcis crebrioribus.

Obs. Lamarck refers to pl. 241. fig. 6 *a, b, c.* of the 'Ency. Méthod.,' and this species is too well known to require many re-

marks, except that it must have priority over *Terebratula orbicularis* of Sowerby, M. C. 1829, of which *Ter. furcata* of the same author is only a young state. It is curious however to see, that notwithstanding M. D'Orbigny's professions of attending always to date, that in his 'Prodrome' he adopts Sowerby's *Ter. orbicularis*, and makes no mention of Lamarck's *Ter. Cardium*, published long before. Similar mistakes are not however rare in that work, nor would I here think it necessary to call attention to this point, if M. D'Orbigny's severity towards others was not so forcibly brought forth in his writings*. The plaits, which are often divided towards the margin in this species in the young age, are also, though rarely so, in the adult, as may be seen on specimens in M. Deslongchamps' collection: the loop process also extended to near the margin, as I hope to illustrate in another work. Lamarck's var. *b*, as can be seen from the specimens in the Garden of Plants, belongs to *Terebratula spinosa*.

48. *Terebratula difformis*, Lamarck and Val. Pl. XV. fig. 48.

T. testa trigonata, dilatata, subdepressa: margine inæqualis in medio sinuoso-deflexo: nate subproducta.

Obs. Lamarck refers to 'Encycl. Méthod.' pl. 242. fig. 5 *a, b, c*, and gives Cap la Heve near Havre, and Mans, both greensand localities. M. D'Orbigny admits this species in his 'Pal. Franç.,' and places it in Fischer's genus *Rhynchonella*. *Terebratula dimidiata*, Sow., would also belong to the same species. However, if we inspect the specimens ticketed by Lamarck in M. Delessert's collection, we shall find that three out of ten belong to his species from the *Tourtia* beds of Tournay; the others being oolitic shells, with the exception of one, which would appear to belong to Sowerby's *Terebratula latissima*.

49. *Terebratula lyra* (Sow. M. C. tab. 138. fig. 2).

50. *Terebratula Menardi*, Lamarck and Val. Pl. XIV. fig. 50.

T. testa gibberula, globosa, inferne truncata, valva majori sinu longitudinaliter sulcato excavata: margine sinuoso deflexo.

Obs. In B. Delessert's collection we find ten specimens of this

* Certain things which might pass with the early naturalists cannot be allowed at the present day, such as simply to describe a species by a few words, which description would suit twenty others; therefore all the new names introduced into M. D'Orbigny's 'Prodrome' cannot claim priority. Should any one fully describe and figure before M. D'Orbigny any of those simply named species which have but three or four words of description and with no reference to figure, the names of the subsequent author ought to be retained; otherwise the practice of M. D'Orbigny would retard science, to say nothing of the injustice and abuses to which it would inevitably lead.

species belonging to the greensand of Mans. M. D'Orbigny admits this species, which he places in his genus *Terebratella*, and states in vol. iv. p. 116 of his 'Pal. Franç.' that the *Terebratula truncata*, Sow., 1826, M. C. vi. p. 71. pl. 537. fig. 3, belongs to a distinct species, and not to *Terebratula Menardi*, Lamk., and to which he gives the new name of *Terebratella Asteriana*, as he cannot retain the name of *Ter. truncata*, it having been given by Linnæus to another shell. There exists however some doubt if on this point M. D'Orbigny's opinion is correct; the general form in *T. Menardi* is often, though *not always*, broader than in our Faringdon specimens, the ribs sharper, and depression of the dorsal valve deeper, and bounded laterally by sharper ridges, lines of growth less strongly marked, mesial longitudinal process on inner side of ventral valve shorter and not so strong. Lamarck's specimens do not appear to vary so much in form as our Faringdon specimens, and have a much thinner shell; but on examining with great care a numerous suite of specimens of these species, both in the collection of the British Museum and those collected by myself in both localities, Messrs. Waterhouse, Woodward and myself believe that the species may be the same, and that the greater or less thickness of the shell might arise from the difference of the water in which they lived; the Faringdon specimens being much worn, so that the plaits must have been much sharper in the living state.

51. *Terebratula decussata*, Val. and Lamk. Pl. XIV. fig. 51.

T. testa subpentagona, subconvexa, valva majori canaliculata, striis transversis tenuibus longitudinaliter decussantibus: nate subproducta foramine magno.

Obs. Lamarck refers to the 'Encyc. Méth.' pl. 245 *a, b, c*. However, in 1811, before Lamarck, Parkinson described and figured this species in the 3rd vol. of his 'Organic Remains,' pl. 16. fig. 5, under the name of *Terebratula coarctata*, which name must be preserved to the species, as M. D'Orbigny has done in his 'Prodrome,' vol. i. p. 316, and Lamarck's name placed among the synonyms along with Sowerby's *Terebratula reticulata*, M. C. tab. 312. fig. 5, 6. The *Ter. coarctata* is very common in the Forest marble and Bradford clay. The only specimen Lamarck had is in B. Delessert's collection.

52. *Terebratula spinosa*, Val. in Lamk. Pl. XIV. fig. 52.

T. testa globosa, dilatata: sulcis parvis spinosis: nate brevissima acuta.

Obs. This species seems to have been first named by Smith, 'Strata identified by Fossils,' 1816 or 1817. Deshayes and Morris also refer to Knorr, Test. Diluv. It is a well-known inferior

oolite species. Lamarck's three specimens are to be seen in the collection of the Garden of Plants with the following locality, "Mortagne près Alençon, Brière:" it is common in Normandy and in England.

53. *Terebratula spathica*, Val. in Lamk. Pl. XIV. fig. 53.

T. testa subtrigonata, subglobosa, lævi: margine supero sinuato: nate acuta subproducta.

Obs. Lamarck gives no reference to a figure, but states that his specimens come from the hills on the boundary of the Sarthe; and I am at a loss to know what is the type of this species, not from want of specimens, but from the number of different species placed under one head in Lamarck's two collections—thirty specimens under this name, some referable to the *Ter. tetraëdra*, Sow., *Ter. concinna*, Sow., *Ter. media*, Sow., *Ter. varians* and *Ter. rimosa*, and perhaps another species; so that as there would always exist much doubt as to the real type, it will be necessary to cancel this species from the nomenclature. In my plate I have figured two of the specimens ticketed by Lamarck as *Ter. spathica*, as some of the boards bear the title of "variety": one is Sowerby's *Ter. tetraëdra*, the other *Ter. varians*.

54. *Terebratula compressa*, Val. in Lamk. Pl. XV. fig. 54.

T. testa dilatata, margine supero denticulato subflexuosa: nate producta acuta.

Obs. Although no reference is given by Lamarck, this is a well-known greensand shell from Mans, and admitted by M. D'Orbigny in his 'Pal. Franç. Ter. Crétacés,' pl. 35, who gives also a long list of synonyms relating to it: the plaiting of the margin in this shell is very peculiar.

55. *Terebratula granulosa*, Val. in Lamk. Pl. XIV. fig. 55.

T. testa subdepressa, rotundata, margine supero antice in rostrum producto: sulcis granulosus: nate brevi.

Obs. No reference as to figure is given, but Lamarck states that the specimens were brought from Monte Mario near Rome by Cuvier. There must however exist some strange mistake in this statement, as many specimens are labeled by Lamarck *Ter. granulosa* both in B. Delessert's collection and that of the Garden of Plants, specimens which never could have been found *in situ* at Rome, where we only find volcanic and tertiary deposits, while the specimens named so in the collections belong not only to different formations, but to different species: thus we find a specimen of *Terebratula reticularis* of Linnæus in B. Delessert's collection ticketed *Ter. granulosa* by Lamarck, and which I have

figured in my plate; besides other specimens of a Neocomian species labelled *Ter. granulosa* var., a figure of which I have also given; and in the collection of the Garden of Plants, besides these last-named shells, we find a specimen of *Terebratula spinosa* and *varians*: it is therefore evident that this species must be cancelled from the nomenclature, since none of the species therein placed could claim a preference.

56. *Terebratula Articulata*, Val. in Lamk. Pl. XIV. fig. 56.

T. testa trigona, depressa, tenerrime longitudinaliter striata: margine supero angulato: nate brevi.

Obs. No reference is given, except that the specimen is in the museum of the Garden of Plants, where I found it, and that it is from the Dep. of the Sarthe. "The smooth surface of this species (adds Lamarck) and its deeply angular front give to it the aspect of the articulation of a shell;" but on examining his specimen, as can be seen by the figure, it has some characters of M. Richard's *Terebratula Cynocephala* and *furcillata*, as the greater half of the valves from the beak and umbo are ornamented by numerous small longitudinal striæ which do not extend to the margin of the shell; it belongs probably to the lias deposits, and I have never seen but the one specimen on which the species was established.

57. *Terebratula radiata*, Val. in Lamk. Pl. XIV. fig. 27.

T. testa subdepressa, inferius coarctata, superne dilatata, rotundata, sulcis longitudinalibus radiatis, margine subflexuosa.

Obs. No reference is given by Lamarck, except that the specimens are in the museum of the Garden of Plants, where I found them. It is probably a Neocomian shell, at least the specimen which I consider the type, and which I draw in my plate. It approaches in form to *Rhynchonella paucicosta*, D'Orb. Pal. Franç. pl. 494. fig. 1, 5.

58. *Terebratula pumila*, Lamarck. Pl. XIV. fig. 58.

T. testa minima, compressa, valva minori complanata, sulcis longitudinalibus radiatis: nate acuta producta.

Obs. As M. Deshayes justly remarks in his new edition of Lamarck, this species belongs to the *Thecidea radiata* (Defrance), and not to the *Magas pumilus* of Sowerby. Several specimens are to be seen both in M. Delessert's collection and in that of the Garden of Plants, which are derived from the chalk of Maestricht.

59. *Terebratula spirifera*, Val. in Lamk. Pl. XV. fig. 59.

T. testa trigonata, transverse dilatata, spiris ad latera decurrentibus instructa, margine supero angulata: nate brevi perforata.

Obs. Lamarck refers to the 'Encyclopédie Méthodique,'

pl. 246. fig. 1 *a, b*, but on inspecting that figure, one might be led to consider that the species must be either *Terebratula acuminata* or *Ter. Meyendorffi*, De Verneuil, Geol. of Russia. However, we find in B. Delessert's collection a specimen of *Ter. acuminata* with that name written by Lamarck, to which he added ("non décrit"). In a letter I lately received from M. Valenciennes, the original describer of the species, he distinctly states that his *Ter. spirifera* is the same shell as that subsequently described and figured by Sowerby in the 'M. C.' under the name of *Spirifer striatus*, which he proves by sending me the original specimen given to him in 1817, when in London, by the author of the 'Mineral Conchology,' a restored figure of which I give in my Pl. XV., M. Valenciennes' specimen being much broken and incomplete. It is, as every one knows, a common carboniferous shell in many countries, and has also received many names. Sowerby published it in 1821, and M. Valenciennes in 1819; but I do not know how far the last-mentioned author's species would have a right to priority over Sowerby's, on account of the false reference given to quite another shell in the 'Ency. Méth.' It is however certain, from the type specimen before me, as well as from the Latin description, "*transverse dilatata, spiris*," that the describer had in view the same shell described afterwards under the name of *Spirifer striatus*. M. Deshayes, in his new edition of Lamarck, was led naturally into the mistake, as any one would have been. He states that "this species is the same as *Ter. acuminata* of Martin and Sowerby, and the figure referred to in the 'Ency. Méth.' would lead one to believe so; but as it is very bad, and only inexactly represents *Ter. acuminata*, it has not prevented me adding here the species intended."

XXXVIII.—On the Internal Structure of *Terebratula pectunculoides*, Schl., *Terebratula pulchella*, Nils., and *Terebratula Deslongchampsii*, nob. By THOMAS DAVIDSON, Esq.

[With a Plate.]

As my intentions are to publish shortly some views relating to the internal calcareous support of the ciliated arms in *Terebratula* and allied genera, I have simply given in Pl. XV. illustrations of two of these supports, hitherto unfigured.

Fig. 4. Pl. XV. represents *Ter. pulchella*, Nils., and its internal calcareous loop, from a specimen derived from the chalk of Belgium, now in the cabinet of M. Deslongchamps.

Fig. 5. Pl. XV. represents *Ter. pectunculoides* (Schl.) and its internal calcareous support considerably enlarged, from two spe-